5/28/03 AMDT

Full Set OF CLAIMS

IN THE CLAIMS:
Please revise the claims as follows:

1. (Currently Amended) A program storage device readable by a machine, tangibly embodying a program of instructions executable by the machine to perform a method for constructing segmentation-based models that satisfy constraints on the statistical properties of the segments, the method comprising:

(1) presenting a collection of training data records comprising examples of input values that are available to the model together with the corresponding desired output value(s) that the model is intended to predict; and

(2) generating on the basis of the training data a plurality of segment models, that together comprise an overall model, wherein each segment model is associated with a specific segment of the training data, said generating comprising performing optimization comprising:

a) generating alternate training data segments and associated segment models;

b) evaluating at least one generated segment to determine whether it satisfies at least one statistical constraint; and

c) selecting a final plurality of segment models and associated segments from among the alternates evaluated that ~~have satisfactory evaluations~~ satisfy at least one of said statistical constraints.

2. (Currently Amended) A program storage device readable by a machine, tangibly embodying a program of instructions executable by the machine to perform a method for

constructing segmentation-based models that satisfy constraints on the statistical properties of the segments, the method comprising:

(1) presenting a collection of training data records comprising examples of input values that are available to the model together with the corresponding output value(s) that the model is intended to predict; and

(2) generating, on the basis of the training data, a plurality of segment models, that together comprise an overall model, wherein each segment model is associated with a specific segment of the training data, said generating comprising performing optimization comprising:

a) generating alternate training data segments and associated segment models using statistical constraints to guide the construction of the data segments in a closed-loop fashion so as to ensure that the resulting data segments satisfy the statistical constraints; and

b) selecting a final plurality of segment models and associated segments from among the alternates generated.

3. (Currently Amended) A program storage device readable by a machine, tangibly embodying a program instructions executable by the machine to perform a method for constructing segmentation-based models that satisfy constraints on the statistical properties of the segments, the method comprising:

(1) presenting a collection of training data records comprising examples of input values that are available to the model together with the corresponding desired output value(s) that the model is intended to predict; and

(2) generating, on the basis of the training data, a plurality of segment models, that together comprise an overall model, wherein each segment model is associated with a specific segment of the training data, said generating comprising:

a) generating alternate pluralities of data segments and associated segment models; and

b) adjusting the alternate pluralities so that the resulting data segments satisfy the statistical constraints.

Cont'd

4. (Currently Amended) A program storage device readable by a machine, tangibly embodying a program of instructions executable by the machine to perform a method for constructing segmentation-based models of insurance risks, the method comprising:

(1) presenting a collection of training data comprising examples of historical policy and claims data; and

(2) generating on the basis of the training data a plurality of segment models, that together comprise an overall model, wherein each segment model comprises a statistical model of insurance risk that is associated with a specific segment of the training data, said generating comprising:

a) generating alternative pluralities of segment models in one of a top-down fashion and a bottom-up fashion;

b) comparing said alternative pluralities of segment models using statistical likelihood scores based on ~~the corresponding~~ statistical models of insurance risk; and

c) selecting a final plurality of segment models and associated segments from among the alternates generated so as to optimize aggregate ~~numerical criteria~~ statistical likelihood scores for the plurality.

5. (Previously Added) The program storage device of claim 1, wherein said evaluating at least one generated segment to determine whether it satisfies at least one statistical constraint comprises:

performing a test whose outcome is not equivalent to a comparison between the number of training records of at least one species of training records belonging to the segment and a numerical quantity that is selectively dependent on the combination of species of training records being considered but otherwise constant for all generated segments that are evaluated.

6. (New) The program storage device of claim 1, wherein said statistical constraint comprises at least one constraint on a statistical estimation error of the corresponding segment model.

7. (New) The program storage device of claim 1, wherein said model relates to an insurance risk model and said at least one statistical constraint comprises an actuarial credibility constraint.

8. (New) The program storage device of claim 7, wherein each said generated segment is evaluated using a statistical constraint based on a threshold calculated for that generated

segment, said threshold based on statistical properties of claim amounts in said generated segment.

9. (New) The program storage device of claim 2, wherein said statistical constraint comprises at least one constraint on a statistical estimation error of the corresponding segment model.

10. (New) The program storage device of claim 3, wherein said statistical constraint comprises at least one constraint on a statistical estimation error of the corresponding segment model.

(2) cont'd

11. (New) The program storage device of claim 1, wherein said generating alternate training data segments and associated segment models comprises splitting larger data segments into smaller data segments.

12. (New) The program storage device of claim 2, wherein said generating a plurality of segment models comprises splitting larger data segments into smaller data segments.

13. (New) The program storage device of claim 3, wherein said generating alternate training data segments and associated segment models comprises splitting larger data segments into smaller data segments.

14. (New) An apparatus comprising:

(1) a receiver to receive a collection of training data records comprising examples of input values that are available to a model together with the corresponding desired output value(s) that the model is intended to predict; and

(2) a calculator to generate, on the basis of the training data, a plurality of segment models, that together comprise an overall model, wherein each segment model is associated with a specific segment of the training data, wherein the generation of said plurality of segment models comprises an optimization process comprising:

a) generating alternate training data segments and associated segment models, each said generated segment having been evaluated to determine whether it satisfies at least one statistical constraint; and

b) selecting a final plurality of segment models and associated segments from among the alternates evaluated that satisfy said statistical constraints.

15. (New) The apparatus of claim 14, wherein said model relates to an insurance risk model and said at least one statistical constraint comprises an actuarial credibility constraint.

16. (New) A computerized method for constructing segmentation-based models that satisfy constraints on the statistical properties of the segments, the method comprising:

presenting, to a computer, a collection of training data records comprising examples of input values that are available to a model, together with the corresponding desired output value(s) that the model is intended to predict; and

based on said training data, automatically generating on said computer, a plurality of segment models, that together comprise an overall model, wherein each segment model is associated with a specific segment of the training data, said generating comprising performing optimization comprising:

generating alternate training data segments and associated segment models, each said generated alternate training data segment having been determined to satisfy at least one statistical constraint; and

selecting a final plurality of segment models and associated segments from among the alternates evaluated that satisfy said statistical constraints.

17. (New) The computerized method of claim 16, wherein said statistical constraint comprises at least one constraint on a statistical estimation error of the corresponding segment model.

18. (New) The computerized method of claim 16, wherein said model relates to an insurance risk model and said at least one statistical constraint comprises an actuarial credibility constraint.

19. (New) A method of at least one of managing and providing consultation for financial decisions, said method comprising at least one of generating, transmitting, receiving, and forwarding a report executed by a computer, said computer having executed a program of instructions to perform a method for constructing segmentation-based models that satisfy

constraints on the statistical properties of the segments, the method executed by said machine comprising:

(1) presenting, to a computer, a collection of training data records comprising examples of input values that are available to a model, together with the corresponding desired output value(s) that the model is intended to predict; and

(2) based on said training data, automatically generating, on said computer, a plurality of segment models, that together comprise an overall model, wherein each segment model is associated with a specific segment of the training data, said generating comprising performing optimization comprising:

a) generating alternate training data segments and associated segment models;

b) evaluating at least one generated segment to determine whether it satisfies at least one statistical constraint; and

c) selecting a final plurality of segment models and associated segments from among the alternates evaluated that satisfy said statistical constraints.

20. (New) The method of claim 19, wherein said model relates to an insurance risk model, said at least one statistical constraint comprises an actuarial credibility constraint, and said financial decision relates to at least one of:

a price structure for insurance policies; and

a policyholder profitability.